

What is claimed is:

1. A gas sensor comprising:  
a sensor element having a length and electrical terminals  
5 formed on an end portion thereof; and  
a connector working to establish electrical connections  
between the electrical terminals of said sensor element and  
conductors extending from inside to outside the gas sensor, said  
connector including terminal connecting members and at least two  
10 holding members, the holding members working to retain therein  
the terminal connecting members and the end of said sensor  
element to make the electrical connections between the electrical  
terminals of said sensor element and the conductors, the terminal  
connecting members and the holding members being so configured  
15 geometrically as to establish mechanical engagement therebetween.
2. A gas sensor as set forth in claim 1, wherein each of the  
terminal connecting members has a protrusion, and each of the  
holding members has formed therein recesses within which the  
20 protrusions of the terminal connecting members are fitted to  
establish the mechanical engagement between the terminal  
connecting members and the holding members.
3. A gas sensor as set forth in claim 2, wherein the protrusions  
25 of the terminal connecting members are bends formed on lengths of  
the terminal connecting members, respectively.

4. A gas sensor as set forth in claim 3, wherein the bends project perpendicular to the lengths of the terminal connecting members, respectively.

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5. A gas sensor as set forth in claim 1, wherein each of the terminal connecting members has a plurality of protrusions, and each of the holding members has formed therein recesses within which the protrusions of the terminal connecting members are fitted to establish the mechanical engagement between the terminal connecting members and the holding members.

6. A gas sensor as set forth in claim 2, wherein each of the terminal connecting members is made up of a supporting portion, a bent portion, and an elastic contact portion placed in electrical contact with one of the electrical terminals of said sensor element, each of the elastic contact portions continuing from an end of the support portion through the bent portion and being turned at the bent portion toward the support portion, wherein the support portion has the protrusion, and wherein the protrusion is located farther from the bent portion than the elastic contact portion .

7. A gas sensor comprising:  
a sensor element having a length and electrical terminals formed on an end portion thereof;  
at least two holding members joined together to define a

chamber therein;

terminal connecting spring members leading to conductors  
extending from inside to outside the gas sensor, said terminal  
connecting spring members being retained within the chamber of  
5 said holding members in electrical contact with the electrical  
terminals of said sensor element so as to add elastic pressures to  
said sensor element in a direction perpendicular to the length of said  
sensor element, respectively, to hold the end portion of said sensor  
element within the chamber of said holding members; and

10 a clamping spring mechanism disposed on an outer  
periphery of said holding members, said clamping spring mechanism  
working to add an elastic pressure  $F2$  to said holding members to  
clamp said holding members together,

wherein the elastic pressure  $F1$  is lower than or equal to an  
15 elastic pressure  $F2$  that is a sum of the elastic pressures produced  
by said terminal connecting spring members.

8. A gas sensor as set forth in claim 7, wherein said clamping  
spring mechanism is made up of at least two springs fitted on said  
20 holding members.

9. A gas sensor as set forth in claim 7, wherein if a plane is  
defined which extends along the length of said sensor element, a  
vector of the elastic pressure  $F1$  and a vector of the elastic pressure  
25  $F2$  have the same position on said plane.

10. A gas sensor comprising:

a plate-shaped sensor element having a length and electrical terminals formed on an end portion thereof;

terminal connecting spring members leading to conductors  
5 extending from inside to outside the gas sensor, each of said terminal connecting members is made up of a supporting portion, an elastic contact portion, and a bent portion connecting between the supporting portion and the elastic contact portion, the bent portion having one of substantially a U-shape and substantially a  
10 V-shape and directing the elastic contact portion toward the supporting portion so as to produce elasticity which allows the elastic contact portion to be deformed toward the supporting portion; and

at least two clamping members working to clamp the end  
15 portion of said gas sensor through said terminal connecting spring members so as to establish elastic contact of each of said terminal connecting spring members with one of the electrical terminals of said sensor element.

20 11. A gas sensor as set forth in claim 10, wherein each of said terminal connecting spring members is made of one of a plate and a round bar.

12. A gas sensor as set forth in claim 10, wherein a surface of  
25 each of said terminal connecting spring members is plated with gold.

13. A gas sensor as set forth in claim 10, wherein each of the elastic contact portion has a protrusion facing a corresponding one of the electrical terminals of said sensor element.

5 14. A gas sensor as set forth in claim 10, further comprising a spring mechanism which produces an elastic pressure oriented perpendicular to the length of said gas sensor to clamp said clamping members together.

10 15. A gas sensor as set forth in claim 14, wherein said spring mechanism is made up of two or more springs.

16. A gas sensor as set forth in claim 10, wherein said clamping members have electrical insulation properties.